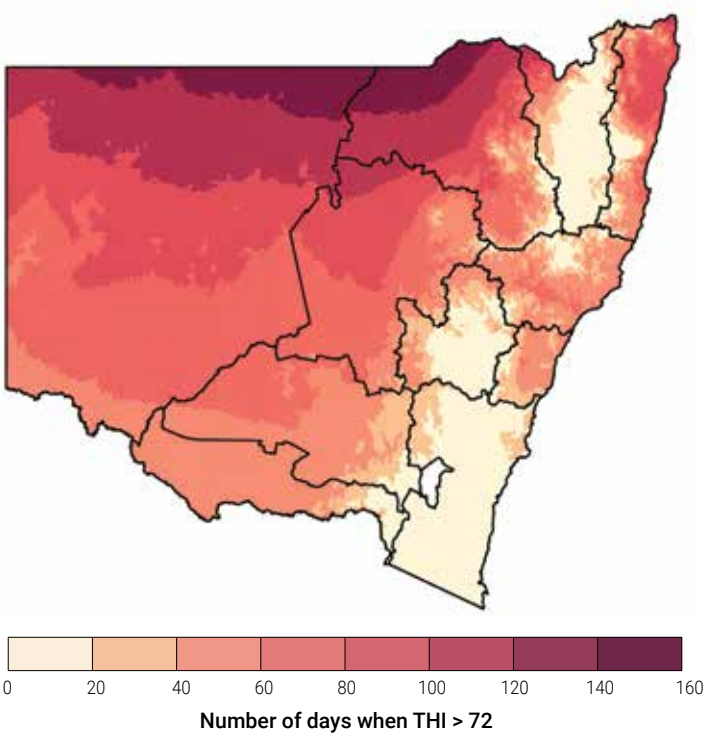
Heat stress and cow comfort: Practical steps for the warmer months

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Hot weather is already a challenge for dairy businesses across NSW, and reducing the impacts of heat stress has become increasingly important in recent years. New modelling by the NSW Department of Primary Industries and Regional Development's Climate Vulnerability Assessment and Dairy teams shows that heat stress is likely to increase during some months and is likely to extend further into spring and autumn in some regions by 2050.



MAP Caption: All regions currently experience some days of moderate heat stress. This map shows the average number of days per year where Temperature Humidity Index (a measure of heat stress) values have exceeded 72 (moderate heat stress) in the recent past (2006-2025).

Climate risks vary between regions and seasons

The Climate Vulnerability Assessment examined how climate conditions for Holstein dairy cows are likely to change across NSW by 2050. It found that the number of months with highly suitable climate conditions is likely to decrease by up to approximately two months a year across most of the state under both emissions scenarios assessed. Increasing heat stress during these months is the main reason for the projected decline in climate suitability. This means some dairy businesses may need to begin heat-management practices earlier in the season and continue them for longer.

The timing and duration of these changes into the future differ between regions.

- The Inland, Riverina Murray and Hunter regions are likely to face increasing heat-stress challenges during parts of late spring, summer and early autumn.
- North Coast dairies will need to continue to manage the combined effects of heat and humidity during the warmer months.
- The South Coast region is expected to remain highly suitable overall, but some areas may experience an increase in heat stress during lactation in warmer months.

These regional differences mean that heat-management strategies will need to be tailored to local conditions and timed carefully. Planning for heat stress should remain a priority across all dairy businesses. It should be noted that when heat stress occurs, its effects often extend across the entire production system, from calves and replacement heifers to lactating and dry cows.

Heat stress affects the whole herd

Heat stress occurs when cows cannot lose enough of the heat they have gained from the environment and generated through eating and digestion. Hot, humid conditions are particularly challenging because humidity reduces the effectiveness of evaporative cooling, which is one of the main ways cows lose heat.

The way we calculate heat stress reflects this relationship between temperature and humidity. The Temperature Humidity Index, or THI, combines air temperature and humidity to help us understand the level of heat stress cattle may experience. The higher the THI, the greater the risk to cow comfort, health, production and reproductive performance.

During periods of heightened heat stress, farmers should consider using the heat stress reduction measures they may have on farm. Each heat stress event will be different and its impact on the herd will be determined by the combination of:

- **airflow** – is there a breeze or are fans available
- **overnight temperatures** – is it remaining hot and still or hot and breezy overnight and
- **duration of hot weather** – it is only a day or a run of hot days and nights.

All these factors and how they are experienced influence the **severity and accumulation** of heat stress and help guide which management strategies are needed.

The effects of heat stress extend beyond an immediate reduction in milk production. Heat stress can reduce feed intake and affect milk composition, fertility, body condition and overall animal health.

Heat-management plans should consider the whole herd, not only lactating cows. Dry cows, calves and replacement



heifers also need protection. Research has found that heat stress during the dry period can reduce milk production in the following lactation, lower calf birth weights and affect the future health and productivity of calves. It should be noted that high-production lactating cows are the most vulnerable to heat stress and heat management plans that support these cows will also support the rest of the herd.

These impacts highlight the importance of managing heat stress, dairy farmers today have access to many practical steps that can be taken before and during hot weather to reduce and protect cow comfort, health and production impacts.

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Prepare, monitor and act early

Practical preparation should begin before hot weather arrives. Priorities include:

- checking that cows have reliable access to clean, cool, fast-flowing water,
- reviewing shade across the farm,
- ensuring sprinklers, fans and other cooling systems are working and ready to operate,
- providing high-quality, easier-to-digest forage and
- considering heat load reduction strategies such as adjusting milking times, feeding strategies and cow movements to cooler parts of the day.

Monitoring cows during times of heat stress remains essential. An increasing breath rate is often the first visible sign of heat stress. The *Cool Cows Manual* recommends checking at least 20 cows by counting flank movements for 20 seconds and multiplying the result by three. A breathing rate above 60 breaths per minute indicates that action is needed. Other warning signs include: bunching, seeking shade or water, reduced feed intake, drooling and open-mouth breathing.

While observing cows is essential, you also do not need to wait for signs of heat stress to occur before acting. Forecast tools can now provide several days' warning, allowing heat-management strategies to be put in place at the right time.

Use forecasts to get ahead of the heat

The success of heat-management strategies is highly dependent on the timing of their deployment. Leave it too late and their effectiveness can be compromised.

The Temperature Humidity Index Forecast allows you to find your farm and view forecast cattle thermal-stress conditions for up to a week ahead for your location. This provides valuable lead time to:

- check sprinklers and fans,
- adjust milking and feeding schedules,
- potentially move stock to shaded paddocks, and
- plan for reducing walking distances if possible.

For a broader view of conditions expected over the coming 1-3 months, the State Seasonal Update provides NSW climate outlooks, seasonal indicators, drought information and regional breakdowns. Using the seasonal outlook for forward planning, together with the cattle comfort forecast for short-term decisions, can help dairy businesses put heat-mitigation measures in place at the right time.



Take-home message

Every farm, season and heat stress event will be different, but the message is consistent: prepare early, monitor conditions and watch cows closely, and act before heat stress becomes severe.

Combining longer-term planning with timely management during hot weather can help protect the comfort, health and productivity of the whole herd.

Priority actions prior to and during a heat event include:

1. Review shade, water and cooling systems before summer heat begins
2. Use forecasts to identify higher-risk periods and act early.
3. Monitor cow breathing rates and behaviour during hot conditions.
4. Protect dry cows, calves and heifers as well as the milking herd.
5. Adjust milking, feeding and movements to avoid peak heat.
6. Review the effectiveness of management actions after each hot period.

Resources list:

- Climate Vulnerability Assessment
- THI forecast tool
- State Seasonal Update
- Cool Cows